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(FILE 'HOME' ENTERED AT 17:02:07 ON 26 FEB 2004)

FILE 'CAPLUS' ENTERED AT 17:02:15 ON 26 FEB 2004

L1 0 S SOFTWARE AND ((3(2W)D) OR (THREE(2W)DIMENSIONAL) (2W) IMAGE)
L2 64 S ((3(2W)D) OR (THREE(2W)DIMENSIONAL) (2W) IMAGE) AND MODELLI
L3 3 S L2 AND REVIEW/DT
L4 61 S L2 NOT L3
L5 5 S L4 AND PATENT/DT
L6 56 S L4 NOT L5
L7 23 S L6 AND PY<2001

FILE 'WPIDS' ENTERED AT 17:07:56 ON 26 FEB 2004

FILE 'USPATFULL' ENTERED AT 17:08:08 ON 26 FEB 2004

L8 20168 S 702/?/NCL
L9 1435 S L8 AND ((3(2W)D) OR (THREE(2W)DIMENSIONAL) (2W) IMAGE)
L10 80 S L9 AND MODELLING
L11 52 S L10 AND (CHEM? OR BIOL?)
L12 32 S L10 AND LIGAND
L13 280 S L8 AND CRYSTAL AND ((3(2W)D) OR (THREE(2W)DIMENSION?) AND

d his

(FILE 'HOME' ENTERED AT 14:05:01 ON 26 FEB 2004)

FILE 'CAPLUS' ENTERED AT 14:05:14 ON 26 FEB 2004

L1 41 S ULTRASPIRACLE PROTEIN

=> d bib,abs 3-6,10-13,17,25,27

L1 ANSWER 3 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	References
AN 2003:310593 CAPLUS	
DN 139:80985	
TI Purification of Drosophila melanogaster Ultraspiracle protein and analysis of its A/B region-dependent dimerization behavior in vitro	
AU Rymarczyk, Grzegorz; Grad, Iwona; Rusek, Agnieszka; Oswiecimska-Rusin, Kamila; Niedziela-Majka, Anita; Kochman, Marian; Ozyhar, Andrzej	
CS Institute of Organic Chemistry, Biochemistry and Biotechnology, Division of Biochemistry, Wroclaw University of Technology, Wroclaw, 50-370, Pol.	
SO Biological Chemistry (2003), 384(1), 59-69	
CODEN: BICHF3; ISSN: 1431-6730	
PB Walter de Gruyter GmbH & Co. KG	
DT Journal	
LA English	
AB Two members of the nuclear receptor superfamily, EcR (ecdysteroid receptor protein) and Usp (Ultraspiracle), heterodimerize to form a functional receptor for the steroid hormone 20-hydroxyecdysone and thus enable it to coordinate morphogenetic events during insect metamorphosis. N-terminally His-tagged Usp was overexpressed in E. coli cells as a non-truncated protein and purified to homogeneity in two chromatog. steps. It was demonstrated that the recombinant receptor specifically binds the ecdysone response element of the hsp27 gene promoter (hsp27EcRE). Moreover, a highly synergistically formed heterodimeric complex with the DNA-binding domain of EcR was obsd. on hsp27EcRE, but not on the native Usp response element from the chorion sl5 gene promoter. Recombinant Usp forms homodimers and homotetramers in the absence of DNA, as judged from gel filtration and chem. crosslinking expts. Truncation of its N-terminal A/B region changes mol. characteristics of Usp, considerably weakening its oligomerization potential under the same exptl. conditions. This contrasts with the results obtained previously for the similarly truncated RXR - a vertebrate homolog of Usp.	
RE.CNT 41	THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD
	ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 4 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	References
AN 2003:243738 CAPLUS	
DN 139:347619	
TI Using nondenaturing mass spectrometry to detect fortuitous ligands in orphan nuclear receptors	
AU Potier, Noelle; Billas, Isabelle M. L.; Steinmetz, Anke; Schaeffer, Christine; Van Dorsselaer, Alain; Moras, Dino; Renaud, Jean-Paul	
CS Laboratoire de Spectrometrie de Masse Bio-Organique, Ecole Europeenne de Chimie, Polymeres et Materiaux, CNRS UMR7509, Strasbourg, 67087, Fr.	
SO Protein Science (2003), 12(4), 725-733	
CODEN: PRICEL; ISSN: 0961-8368	
PB Cold Spring Harbor Laboratory Press	
DT Journal	
LA English	

AB Nondenaturing electrospray mass spectrometry (ESI-MS) has been used to reveal the presence of potential ligands in the ligand-binding domain (LBD) of orphan nuclear receptors. This new approach, based on supramol. mass spectrometry, allowed the detection and identification of fortuitous ligands for the retinoic acid-related orphan receptor β (ROR β) and the **ultraspiracle protein** (USP). These fortuitous ligands were specifically captured from the host cell with the proper stoichiometry. After org. extn., these mols. have been characterized by classic anal. methods and identified as stearic acid for ROR β and a phosphatidylethanolamine (PE) for USP, as confirmed by crystallog. These mols. act as "fillers" and may not be the physiol. ligands, but they prove to be essential to stabilize the active conformation of the LBD, enabling its crystn. The resulting crystal structures provide a detailed picture of the ligand-binding pocket, allowing the design of highly specific synthetic ligands that can be used to characterize the function of orphan nuclear receptors. An addnl. advantage of this new method is that it is not based on a functional test and that it can detect low-affinity ligands.

RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 5 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	Cited References
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AN 2003:230891 CAPLUS
DN 139:18590
TI Effect of ecdysone agonists on vitellogenesis and the expression of EcR and USP in codling moth (*Cydia pomonella*)
AU Sun, Xiaoping; Song, Qisheng; Barrett, Bruce
CS Department of Entomology, University of Missouri, Columbia, MO, 65211, USA
SO Archives of Insect Biochemistry and Physiology (2003), 52(3), 115-129
CODEN: AIBPEA; ISSN: 0739-4462
PB Wiley-Liss, Inc.
DT Journal
LA English
AB The effects of tebufenozide and methoxyfenozide on vitellogenin (Vg) synthesis/release in the fat body, translocation in hemolymph, uptake by the ovary, and the expression of the ecdysone receptor (EcR) and its heterodimer partner, **ultraspiracle protein** (USP) in fat body, were investigated in *Cydia pomonella*. The results indicated that both ecdysone agonists significantly increased the Vg level in the adult hemolymph when the moths were exposed to agonist-treated surfaces. However, these agonists did not affect Vg release from the fat body nor Vg deposition in the first batch oocytes. Western blot anal. revealed that the expression of EcR and USP was significantly increased in tebufenozide- and methoxyfenozide-treated samples compared to the control, suggesting that ecdysone agonists regulated the Vg synthesis via the EcR and USP proteins complex.

RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 6 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	Cited References
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AN 2003:227261 CAPLUS
DN 139:209479
TI Structure-based analysis of the **ultraspiracle protein** and docking studies of putative ligands
AU Sasorith, Souphatta; Billas, Isabelle M. L.; Iwema, Thomas; Moras, Dino; Wurtz, Jean-Marie
CS Dep. Genomique Biologie Structurales, Inst. Genetique Biologie Moleculaire Cellulaire, Illkirch, 67404, Fr.

SO Journal of Insect Science (Tucson, AZ, United States) [online computer file] (2002), 2, No pp. given
 CODEN: JISTCY; ISSN: 1536-2442
 URL: http://www.insectscience.org/2.25/Sasorith_et.al._JIS_2_25_2002.pdf
 PB University of Arizona Library
 DT Journal; (online computer file)
 LA English
 AB The **ultraspiracle protein** (USP) is the insect ortholog of the mammalian retinoid X receptor (RXR). Fundamental questions concern the functional role of USP as the heterodimerization partner of insect nuclear receptors such as the ecdysone receptor. The crystallog. structures of the ligand binding domain of USPs of *Heliothis virescens* and *Drosophila melanogaster* solved recently show that helix 12 is locked in an antagonist conformation raising the question whether USPs could adopt an agonist conformation as obsd. in RXR α . In order to investigate this hypothesis, a homol. model for USP is proposed that allows a structural anal. of the agonist conformation of helix 12 based on the sequence comparison with RXR. For USP, one of the main issues concerns its function and in particular whether its activity is ligand independent or not. The x-ray structures strongly suggest that USP can bind ligands. Putative ligands have therefore been docked in the USP homol. model. Juvenile hormones and juvenile hormone analogs were chosen as target ligands for the docking study. The interaction between the ligand and the receptor are examd. in terms of the pocket shape as well as in terms of the chem. nature of the residues lining the ligand binding cavity.

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 10 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text **References**

AN 2002:658234 CAPLUS
 DN 137:196680
 TI Substitution variants of nuclear receptors and their use in a dual switch inducible system for regulation of gene expression
 IN Palli, Subba Reddy; Kumar, Mohan Basavaraju; Cress, Dean Ervin; Fujimoto, Ted Tsutomu
 PA Rohm and Haas Company, USA; Rheogene Inc.
 SO PCT Int. Appl., 148 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 6

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002066612	A2	20020829	WO 2002-US5090	20020220
WO 2002066612	A3	20031030		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1373470	A2	20040102	EP 2002-742489	20020220
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI US 2001-269799P	P	20010220		
US 2001-313925P	P	20010821		
WO 2002-US5090	W	20020220		

OS MARPAT 137:196680

AB This invention relates to the field of biotechnol. or genetic engineering. A mechanism for the regulation of gene expression that allows tight control of a no. of genes is described. The transactivation and DNA-binding domains of transcription regulatory factors are sepd. by placing them on two different protein cassettes. The transactivation and DNA-binding domains of transcription regulatory factors are sepd. by placing them on two different fusion proteins. The chimeric genes encoding the fusion proteins encode a first protein that is a DNA-binding domain fused to a nuclear receptor and the second encoding a transactivation domain fused to a nuclear receptor polypeptide. Interaction of the first protein with the second protein effectively tethers the DNA-binding domain to the transactivation domain. Since the DNA-binding and transactivation domains reside on two different mols., the background activity in the absence of ligand is greatly reduced. Novel substitution mutant of nuclear receptors, specifically Group H nuclear receptors, that show improved ligand responsiveness that can be used to modulate gene expression in a host cell for applications such as gene therapy, large scale prodn. of proteins and antibodies, cell-based high throughput screening assays, functional genomics and regulation of traits in transgenic organisms. In particular, one gene expression cassette is inducibly regulated by a steroid ligand and the other gene expression cassette is inducibly regulated by a non-steroid ligand. Specific embodiments of the invention provide ecdysone receptor ligand-binding domains fused to the DNA-binding domains of GAL4 or LexA, and the ligand-binding domains of retinoid X receptor or **ultraspiracle protein** fused to the VP16 transactivation domain. A series of substitution mutants of insect ecdysteroid receptors were prepd. by std. PCR mutagenesis and tested for their responsiveness to ecdysteroid induction of reporter gene expression in the dual switch system. Variants that showed increased responsiveness to the ecdysteroids with decreased responsiveness to non-steroid ligands were identified. Variants showed increased responsiveness to both classes of effectors, or to nonsteroids but not ecdysteroids, were also identified.

L1 ANSWER 11 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	Index References
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AN 2002:276176 CAPLUS

DN 136:305140

TI Ecdysone receptor, retinoid X receptor and **ultraspiracle protein** based dual switch inducible gene expression modulation system

IN Dhadialla, Tarlochan Singh; Cress, Dean Ervin; Carlson, Glenn Richard; Hormann, Robert Eugene; Palli, Subba Reddy; Kudla, Arthur John; Herzig, Ronald Phillip, Jr.; Philip, Mohan

PA Rohm and Haas Company, USA

SO PCT Int. Appl., 79 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	<u>WO 2002029075</u>	A2	20020411	<u>WO 2001-US30608</u>	20010928
	<u>WO 2002029075</u>	A3	20021031		
	<u>WO 2002029075</u>	C1	20021227		
	<u>WO 2002029075</u>	C2	20030220		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2002110861 A1 20020815 US 2001-965697 20010927
 AU 2001094916 A5 20020415 AU 2001-94916 20010928
 EP 1334200 A2 20030813 EP 2001-975606 20010928

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

PRAI US 2000-237446P P 20001003
 US 2001-965697 A 20010927
 WO 2001-US30608 W 20010928

AB The present invention relates to the field of biotechnol. or genetic engineering. More specifically, the present invention relates to a multiple inducible gene regulation system that functions within cells to simultaneously control the quant. expression of multiple genes. The transactivation and DNA-binding domains of transcription regulatory factors are sepd. by placing them on two different protein cassettes. The improved gene expression system comprises two chimeric gene expression cassettes; the first encoding a DNA-binding domain fused to a nuclear receptor polypeptide and the second encoding a transactivation domain fused to a nuclear receptor polypeptide. Interaction of the first protein with the second protein effectively tethers the DNA-binding domain to the transactivation domain. Since the DNA-binding and transactivation domains reside on two different mols., the background activity in the absence of ligand is greatly reduced. In particular, one gene expression cassette is inducibly regulated by a steroid ligand and the other gene expression cassette is inducibly regulated by a non-steroid ligand. Specific embodiments of the invention provide ecdysone receptor ligand-binding domains fused to the DNA-binding domains of GAL4 or LexA, and the ligand-binding domains of retinoid X receptor or **ultraspiracle protein** fused to the VP16 transactivation domain.

L1 ANSWER 12 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	Citing References
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AN 2002:157150 CAPLUS

DN 136:197331

TI Identification of the *Heliothis virescens* homolog of the **ultraspiracle protein** by sequence homology and the development of novel insecticides

IN Zitzmann, Werner; Franken, Eva-Maria; Janssen, Martina; Schulte, Thomas

PA Bayer A.-G, Germany

SO Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1182212	A2	20020227	EP 2001-116616	20010712
	EP 1182212	A3	20020306		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 10036469	A1	20020228	DE 2000-10036469	20000725
	JP 2002345484	A2	20021203	JP 2001-218081	20010718
	US 2002037556	A1	20020328	US 2001-909672	20010720
PRAI	DE 2000-10036469	A	20000725		
AB	The <i>Heliothis virescens</i> homolog of the juvenile hormone receptor ultraspiracle is identified. The protein may be useful as a target for novel insecticides.				

L1 ANSWER 13 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text	Citing References
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AN 2002:87199 CAPLUS
 DN 136:130549
 TI The three-dimensional structure of the ligand binding domain of
ultraspiracle protein (USP) and its use in the design of ligands for
 the domain
 IN Franken, Eva-Maria; Janssen, Martina; Schindler, Michael; Tietjen, Klaus;
~~Moras~~, Dino; Wurtz, Jean-Marie; Rochel-Guibertau, Natacha;
 Billas-Massobrio, Isabelle
 PA Bayer A.-G., Germany
 SO Eur. Pat. Appl., 87 pp.
 CODEN: EPXXDW
 DT Patent
 LA German
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	<u>EP 1176152</u>	A2	20020130	<u>EP 2001-116617</u>	20010712
	<u>EP 1176152</u>	A3	20021211		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	<u>DE 10036461</u>	A1	20020207	<u>DE 2000-10036461</u>	20000725
	<u>US 2003027984</u>	A1	20030206	<u>US 2001-909556</u>	20010720
	<u>JP 2002363198</u>	A2	20021218	<u>JP 2001-223966</u>	20010725
PRAI	<u>DE 2000-10036461</u>	A	20000725		

this ap-4

AB The three-dimensional structure of the ligand-binding domain of the
ultraspiracle protein of *Heliothis virescens* is detd. by X-ray
 diffractometry. Factors affecting the response of the receptor to ligand
 binding and its transition between antagonistic and agonistic conformation
 are identified.

L1 ANSWER 17 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text References

AN 2001:278087 CAPLUS
 DN 134:349657
 TI Crystal structure of the ligand-binding domain of the **ultraspiracle**
protein USP, the OrthoLog of retinoid X receptors in insects
 AU Billas, Isabella M. L.; Moulinier, Luc; Rochel, Natacha; Moras, Dino
 CS Genomics and Structural Biol. Lab., Inst. Genetique Biol. Mol. Cellulaire,
 CNRS/INSERM, Univ. Louis Pasteur, Illkirch, 67404, Fr.
 SO Journal of Biological Chemistry (2001), 276(10), 7465-7474
 CODEN: JBCHA3; ISSN: 0021-9258
 PB American Society for Biochemistry and Molecular Biology
 DT Journal
 LA English
 AB The major postembryonic developmental events happening in insect life,
 including molting and metamorphosis, are regulated and coordinated
 temporally by pulses of ecdysone. The biol. activity of this steroid
 hormone is mediated by two nuclear receptors: the ecdysone receptor (EcR)
 and the **Ultraspiracle protein** (USP). The crystal structure of the
 ligand-binding domain from the lepidopteran *Heliothis virescens* USP
 reported here shows that the loop connecting helixes H1 and H3 precludes
 the canonical agonist conformation. The key residues that stabilize this
 unique loop conformation are strictly conserved within the lepidopteran
 USP family. The presence of an unexpected bound ligand that drives an
 unusual antagonist conformation confirms the induced-fit mechanism
 accompanying the ligand binding. The ligand-binding pocket exhibits a
 retinoid X receptor-like anchoring part near a conserved arginine, which
 could interact with a USP ligand functional group. The structure of this
 receptor provides the template for designing inhibitors, which could be
 utilized as a novel type of environmentally safe insecticides.

RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 25 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

	Full Text	References
AN	1998:116253	CAPLUS
DN	128:151934	
TI	Regulation of transcription by insect steroid hormones	
AU	Fujiwara, Haruhiko; Matsuoka, Tomoko	
CS	Grad. Sch. Sci., Univ. Tokyo, Tokyo, 113, Japan	
SO	Kagaku to Seibutsu (1998), 36(2), 75-77	
	CODEN: KASEAA; ISSN: 0453-073X	
PB	Gakkai Shuppan Senta	
DT	Journal; General Review	
LA	Japanese	
AB	A review with 7 refs., on the mol. mechanism of metamorphosis regulation by ecdysone. The ecdysone-ecdysone receptor- ultraspiracle protein complex activates transcription of early genes and early-late genes. Transcription regulation mechanisms and functions of nuclear receptors (esp. DHR3) are discussed.	

L1 ANSWER 27 OF 41 CAPLUS COPYRIGHT 2004 ACS on STN

	Full Text	References		
AN	1997:805886	CAPLUS		
DN	128:44943			
TI	Screening for ultraspiracle inhibitors as potential insecticides			
IN	Heinrich, Julia N.; De La Cruz, Fernando; Kirsch, Donald R.			
PA	American Cyanamid Company, USA			
SO	PCT Int. Appl., 45 pp.			
	CODEN: PIXXD2			
DT	Patent			
LA	English			
FAN.CNT 1				
	PATENT NO.	KIND DATE APPLICATION NO. DATE		
	-----	-----	-----	-----
PI	WO 9745737	A1 19971204	WO 1997-US10212	19970530
	W: CA, JP			
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			
	EP 912896	A1 19990506	EP 1997-928958	19970530
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI			
	US 6110698	A 20000829	US 1997-865960	19970530
	JP 2000516085	T2 20001205	JP 1997-543090	19970530
PRAI	US 1996-18817P	P 19960531		
	WO 1997-US10212	W 19970530		

AB The invention relates to the identification of inhibitors of "orphan" nuclear receptors, or receptors for which no natural ligand is known. Specifically, it relates to the **ultraspiracle protein**, or Usp, of *Drosophila melanogaster* and homologues thereof in other insect species. A transformed yeast cell is provided, comprising an Usp binding partner, Usp or a deriv. thereof, an a reporter gene. Expression of the reporter gene requires the Usp-Usp binding partner complex. The transformed yeast is incubated in the presence and absence of the test compd. to form the test culture and control culture, resp., and expression of the reporter gene is monitored. The invention provides for identifying compds., variant nuclear proteins, and other auxiliary proteins that interfere with Usp function. Usp inhibitory compds. are useful as insecticides or as lead compds. for the development of insecticides.